



Aftermarket Catalytic Converters

Guide to Their Purchase, Installation, and Use



By now most Americans are familiar with at least the name "catalytic converter." Catalytic converters are the most important pollution-control devices that have been installed on U.S. passenger cars and light-duty trucks since 1975.

The term "aftermarket converter" still requires some explanation. An aftermarket converter is any catalytic converter that is not identical to the new original equipment converter that was on a vehicle when it left the manufacturer. Aftermarket converters can be either used refurbished but original-equipment converters or brand-new "universal" converters produced to fit a wide variety of vehicles.

Manufacturer-installed original-equipment converters have been custom-designed to fit and perform properly on a specific vehicle and to last its whole lifetime if the vehicle is properly tuned and maintained. Unfortunately, not all drivers have given their vehicles the proper maintenance needed to preserve their converters. As a result, some have been ruined; other converters have been removed altogether. Therefore, a large number of car owners may need to replace disabled or removed converters either immediately or in the near future.

To ensure the effectiveness of the converters available to consumers, EPA decided that guidelines were needed to govern the sale, installation, and use of aftermarket catalytic converters. This booklet explains what those guidelines are and how they will be enforced.

EPA's aftermarket-converter guidelines apply to people engaged in the business of automotive service and repair as well as anyone engaged in the business of repairing, servicing, leasing, selling, or trading motor vehicles (or motor vehicle engines) or operating a motor vehicle fleet. Under the authority of Section 203(a)(3) of the Clean Air Act, all these persons have been prohibited from installing or selling aftermarket catalytic converters that have not met the criteria detailed in EPA's "Sale and Use of Aftermarket Catalytic Converters," an interim enforcement policy published on August 5, 1986.

This interim policy applies only to aftermarket converters manufactured or refurbished after December 18, 1986. Under the policy, all aftermarket converters installed or sold for installation in the United States after January 1, 1988, must meet EPA's requirements.

Violators of this policy are now subject to a civil penalty of up to \$10,000 for each improper installation. In addition, all persons subject to the policy are required to keep certain records pertaining to the aftermarket converters they install.

If you still have questions after reading the information provided below, please contact EPA by writing Field Operations and Support Division (██████████) U.S. Environmental Protection Agency, Washington, D.C. 20460

NEW MAILCODE (6406J)
NEW TELEPHONE NUMBER (202) 233-9100

The Need for Special Requirements

Aftermarket catalytic converters may be an alternative for owners of vehicles whose original manufacturer-installed converter has been ruined or removed. If a vehicle is out of warranty, the price of a new original-equipment converter (or set of converters) can be anywhere from \$300 to \$1,000. This expense is often a deterrent to prompt and proper maintenance. In addition, these original-equipment converters are sometimes scarce and hard to find. Their unavailability raises further barriers to vehicle owners in search of proper maintenance.

Since the effectiveness of converters depends on their proper installation, performance, and durability, EPA is now requiring aftermarket converters to meet certain minimum standards. The Agency is also requiring installers of aftermarket converters to select the proper ones for each installation.

These requirements make everyone "play by the same rules." In doing so, they maximize the benefits to air quality that are the goals of the policy. The policy also sets forth certain warranty, reporting, and recordkeeping requirements that make it possible for EPA to enforce the aftermarket-converter policy and ensure that customers get what they pay for.

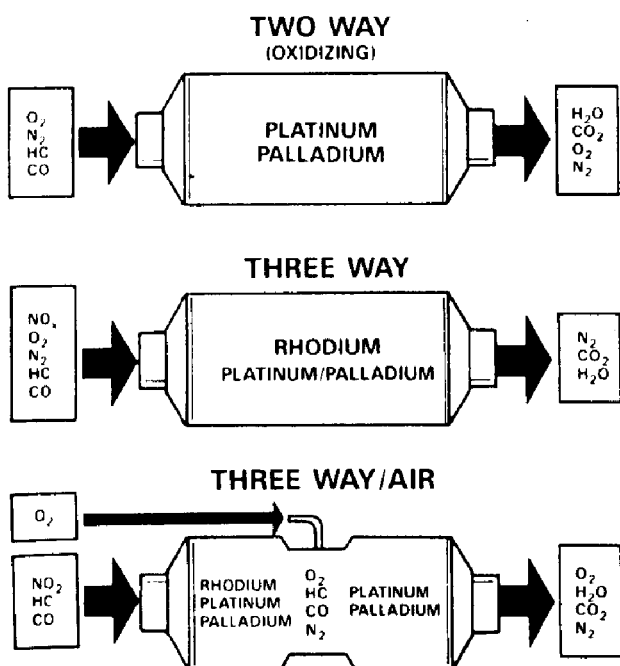
Types of Aftermarket Converters

There are two main categories of aftermarket converters: new and used. New aftermarket converters are *not* new original-equipment converters custom-designed to work on a certain vehicle and installed at the factory. Instead they are products manufactured for installation later in the life of a vehicle, and again unlike new original-equipment converters, new aftermarket converters are not designed for use on one particular vehicle alone. The predominant type of new aftermarket converter is "universal," built to control—within certain limits—emissions on a wide variety of vehicles. New

aftermarket-converter manufacturers are required to provide warranty protection.

Used aftermarket converters are usually "reconditioned" original-equipment converters; as a result, they can only be installed on the type of vehicle or vehicles for which they were originally intended. Used converters are not required to be covered by warranties.

Both new and used aftermarket converters fall into three sub-categories: oxidation converters, three-way converters, and three-way-plus-oxidation converters



Oxidation converters are the early generation of converters that were designed to reduce hydrocarbons (HC) and carbon monoxide (CO). Oxidation converters usually contain platinum and/or palladium.

In 1980-81—earlier on some California vehicles—most vehicle manufacturers began using three-way converters (TWCs) designed to reduce nitrogen oxides (NO_x) in addition to HC and CO. Three-way converters usually contain, in addition to platinum and/or palladium, the noble metal rhodium. Coinciding with the installation of TWCs, vehicles were fitted with computer control systems and oxygen sensors usually employed to precisely regulate the air to fuel (A/F) ratio and mixture controls.

Some converters have both a three-way catalyst and an oxidation catalyst together in

one housing or "can." These are called three-way-plus-oxidation (TW + OC) or dual-bed converters. These converters have air injected between the two sections to help the two different chemical reactions occur. Three-way catalysts require a slightly richer mixture while the oxidation converter requires a lean mixture. Hence, air is injected after the three-way "bed" and before the oxidation "bed."

It is important to install the correct converter type if it is to operate effectively and not have an adverse effect on the performance of the vehicle or its emission-control system.

Which Converters Comply

Many people in the automotive business, not to mention an even larger number of drivers, are unsure which aftermarket converters do—and which do not—satisfy the provisions of the new EPA policy.

Fortunately, there are easy ways to tell if an aftermarket converter meets EPA requirements. A converter that meets those requirements must be properly labeled and warranted to meet federal durability and performance standards.

New aftermarket converters are required to have a five year, 50,000 mile warranty on the converter shell and end pipes. They are also required to be warranted to meet EPA's emission performance standards for 25,000 miles when the vehicle is properly used and maintained.

Used converters are only required to meet the performance requirements that applied at the time of sale; no additional warranty is required.

All manufacturers of new and used converters who meet the EPA requirements must state that fact in writing. Usually this statement is made in the warranty information or vehicle application catalog.

Labeling Requirements

Required labels on the converters will have a series of letters and numbers that appear in the following format:

N/XX/YYYY/ZZZZ for new converters

U/XX/YYYY/ZZZZ for used converters

Where N indicates a new converter

U indicates a used converter

XX is the manufacturer's code issued by EPA

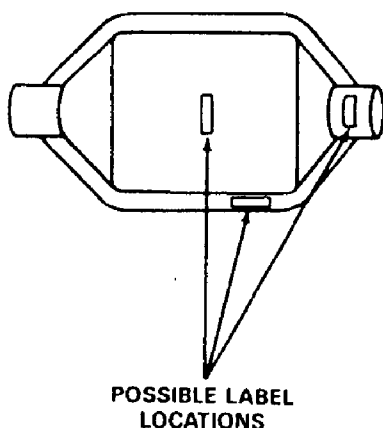
YYYY is usually a numerical designation of the part or the vehicle it should go on

ZZZZ is the month and year of manufacture (e.g., "0187" for January 1987)

Note: Converters manufactured for sale in California may have the letters "CA" in place of the "N" or "U." Since California's standards are more stringent than EPA's, these converters will also meet EPA requirements.

Many trade publications will also carry information about which companies have converters that meet EPA requirements.

If you're still not sure, call EPA at (202) 382-2640.



Unacceptable Used Converters

It is a violation of EPA's policy to install a used converter from a salvage yard unless it has been properly tested and labeled. The same applies to selling such a converter for reuse.

Similarly, it is a violation to install an untested converter brought in by a customer, even if the customer insists that the converter came off of the same vehicle.

Salvage or junk yards are considered liable for tampering if they sell converters that have not been tested or do not meet the requirements outlined in EPA's policy, provided that the converters in question have been installed by parties subject to Section 203(a)(3) of the Clean Air Act.

Manufacturer Requirements

Manufacturers of new converters are required to run two worst-case tests. Vehicles equipped with the new converters are driven for 25,000 miles each and then subjected to testing. The testing must show that the converters meet certain performance standards for reduction of emissions.

Reconditioners or remanufacturers of used converters may only use those that were original-equipment converters. Furthermore, they must bench-test each converter to ensure satisfactory performance.

Both new and used converter manufacturers must comply with certain EPA recordkeeping and reporting requirements. They must also have a system to notify installers of the EPA requirements and restrictions that apply.

Manufacturers of new converters are also required to provide a warranty on the converter shell and end pipes for five years or 50,000 miles, whichever comes first, and for 25,000 miles on converter emission performance.

All converters are required to be labeled as previously described.

Proper Installation

People engaged in automotive service or repair need to know under what circumstances they can install aftermarket converters.

Generally, there are only three situations when you *can* install an aftermarket converter:

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- If the converter is missing from the vehicle when brought in for exhaust system repair.
 - If the state or local inspection program has determined that the existing converter has been lead-poisoned, damaged, or otherwise needs replacement.
 - If the vehicle is more than five years old or has more than 50,000 miles, and there is a legitimate need for converter replacement that has been established and appropriately documented (e.g., a plugged converter or unrepairable exhaust leaks).

Any other converter replacement must be with a new original equipment converter—or its equivalent.

Aftermarket converters *cannot* be used for replacement:

- If the existing converter is present and functioning properly.
- If the replacement is under recall or warranty.
- If the vehicle is returning from overseas use.

Choosing the Right Converter

Installers should check the manufacturer's catalog to determine the proper converter for a driver's car or truck. Remember that particularly large vehicles and engines may not be covered by most manufacturers. After you've selected the correct type of converter, consider engine-size and vehicle-weight limitations. If the converter was not designed to cover a large enough vehicle or engine, installing it may lead to its destruction; it may also cause vehicle or engine problems and void the converter warranty, in addition to violating federal law.

Installation Requirements

Besides installing aftermarket converters *only* in the three situations outlined above, installers have other requirements and restrictions to

keep in mind. These include completely documenting the need for converter replacement, properly installing the correct converter on the vehicle, and informing customers of their rights as well as certain restrictions.

Specifically, installers must:

- Make sure that if the replacement is not required by a state or local program, both customer and installer sign a statement concerning why the converter was replaced. (Manufacturers either provide a generic version of this kind of statement with the converter, or they have an example printed in their catalogs.)
- Keep a copy of the program representative's statement or order if the converter replacement was required by a state or local program.
- See to it that the invoice for replacement includes the customer's name and complete address, and the vehicle's make, model year, and mileage, as well as the reason for replacement.
- Retain copies of the above invoices and statements for six months. Also, retain the replaced converters for 15 days, and make sure they are marked to identify which customer's car they came from.
- Install the converter in the same location as the original.
- Install the same type of converter as the original: oxidation, three-way, or three-way plus oxidation (dual-bed). This information is sometimes available on the emissions tune-up label or in the manufacturer's application catalog.
- Install the proper converter for the vehicle as determined and specified by the converter manufacturer. There are engine-size and vehicle-weight limitations that make it inappropriate to install certain converters on certain vehicles. Therefore, the catalog should always be consulted for the correct application.
- Make sure the converter is properly connected to any existing air injection components.

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- Install all the other required converters the vehicle would have originally come with unless the converter manufacturer has stated in writing that the aftermarket converter is designed to replace more than one converter.
 - For new aftermarket converters, fill out the warranty information card supplied by the manufacturer and give it to the vehicle owner or operator.

Legal Penalties

Converter installers and others subject to Section 203(a)(3) should be aware of the legal penalties for failure to comply with EPA's aftermarket converter policy. They should also understand the rationale behind the penalties: it is a violation of federal law to install or use the wrong type of catalytic converter because such a converter is likely to increase the amount of pollution coming out of a vehicle.

Penalties for violations by service or repair shops, or fleet operators are up to \$2,500 per violation. (Each improper installation is considered a separate violation.) New car dealers can be penalized up to \$10,000 per violation. Also, any person who causes a violation of Section 203(a)(3) could face the same penalty as the installer.

Customer Guidelines

Customers need to know certain things before they buy an aftermarket converter:

- First and foremost, that the original converter on a car or truck was designed to last the life of the vehicle if it was properly used and maintained, and it is warranted by the vehicle manufacturer to last at least five years or 50,000 miles, whichever comes first. Customers should consult their vehicle warranty booklets for further information.
- Many drivers worry about the effect catalytic converters will have on their cars' performances. They should understand that an original-equipment converter is an integral part of the vehicle's emission and engine system that has been designed to achieve the lowest possible emissions consistent with optimal performance.

However, new aftermarket converters are generally designed to be installed on a wide range of vehicles. As a result, the backpressure changes created may, in some cases, adversely affect vehicle and engine performance. Used converters are not required to have a warranty, so their performance and remaining life is dependent on the history of their prior usage.

In general, aftermarket converters are not designed to perform as well as the converters originally installed on the vehicle by the manufacturer. Aftermarket converters will, however, provide acceptable performance at a lower cost than new original-equipment converters.

- Competent installation is vital. Backpressure and heat are created during the operation of converters, and there are also variations in the effectiveness and compatibility of some emission systems with certain converters. Therefore, it is important to make sure that the converter installed is the proper one for a customer's car or truck. Each installer should check the application catalog that describes the vehicles on which each converter can be installed.

- Proper maintenance is also extremely important. Next to installing the proper converter, probably the best way to keep the converter operating properly and under warranty is to ensure that the vehicle is properly tuned. A properly tuned and operated vehicle is critical for long converter life. Otherwise, drivers may ruin their converters, void their warranties, and possibly cause engine damage along with higher emissions.

Drivers are not subject to legal penalties under EPA's aftermarket converter policy, but they can suffer in a different way: from impaired vehicle performance and increased pollution caused by using the wrong catalytic converter. In some severe cases, converter or engine overheating could occur, resulting in unsafe operation and possible engine damage. These conditions—or even simply using the wrong part on a vehicle—may allow the converter manufacturer not to honor the 25,000 mile or the five year/50,000 mile warranty.